Menooa Avrand

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EDUCATION

Bachelor of Science in Mechanical Engineering | University of California, Berkeley| **GPA: 3.7/4.0** December 2025

SKILLS

- **CAD:** SolidWorks | Fusion 360 | Onshape | Autodesk Inventor | AutoCAD | FEA
- **Design & Fabrication:** SLA & FDM 3D Printing | CNC Router, Lathe, Mill | Plasma Cutting | Laser Cutting | GD&T
- **Software & Others:** MATLAB | Python | G-code | Arduino | IoT | Simulink | Confluence & Jira

EXPERIENCE

Ferrari | Mechanical Engineer Intern July 2025 – Nov 2025

- Led preliminary engineering and **manufacturability studies** for concealed windscreen wiper architectures, down-selecting concepts based on **TRL, DFMA, cost, weight, robustness, and integration constraints**.
- **Owned CAD and FEA-driven material trade studies** (carbon-black elastomers, TPU, silicone, polycarbonate), assessing **structural performance, durability, and integration feasibility**, while validating **packaging, tooling, and production constraints** with vehicle architecture teams.

UC Berkeley Cal Sol | Vehicle Hardware and Dynamics Team Lead July 2025 – Dec 2025

- Led mechanical design and systems integration of steering, suspension, hubs, and brake systems, **reducing weight by 40%, costs by 30%**, and improving dynamic performance, ergonomics, and serviceability compared to the previous generation vehicle.
- Managed **30+ engineers'** timelines, task delegation, and design reviews of highly iterative workflows to ensure hardware readiness for manufacturing and integration
- Oversaw **FEA validation**, DFMA , and **GD&T** to support release of safety-critical assemblies

UC Berkeley Cal Sol | Lead Steering Engineer Aug 2023 – June 2025

- Led a team of four engineers in the **end-to-end development** of the steering system for the new 11th-generation vehicle reducing steering package **weight by 30%, cost by 25%,** while **increasing overall load rating by 50%** by developing a set of highly iterative **workflow/analysis tools**, allowing for rapid design.

PROJECTS

Autonomous Fire Suppression Robot| *(SolidWorks, FEA, IoT, FDM Printing)* YouTube Link

- Designed and developed an autonomous fire suppression system with infrared sensing, real-time positioning, and remote operation, leading the **electrical system design**, including circuitry, power distribution, and microcontroller integration for seamless sensor-actuator communication.
- Led **manufacturing, assembly**, and **system integration**, validating **electromechanical interfaces** and optimizing fire suppression accuracy through closed-loop feedback control.

Thermal Paste Performance| *(SolidWorks, GD&T,* IoT*/Sensors, MATLAB, Mill)* Full Report

- Designed and conducted a controlled experiment to evaluate **thermal paste conductivity** using custom aluminum blocks, K-type thermocouples, and ESP32-based data acquisition.
- Analyzed temperature gradients, revealing that the most effective thermal paste **reduced thermal resistance by 79%** compared to setups without paste and by **51%** compared to other industry-standard pastes.

3D Printed Wind Turbine Design and Testing| *(FEA, SolidWorks, FDM Printing)* Full Report

- Designed, simulated, and fabricated turbine blades and tower structure, achieving 8+ N/mm stiffness while maintaining a **weight below 350g** and generating **>2W of power**.
- Utilized FEA for stiffness simulations and optimized rotor blade profiles using 3D printing prototyping.

Microfluidic Exhaust Valve| *(SolidWorks, FEA, MUMPS)* Full Report

- Designed a MEMS-based microfluidic valve integrating yoke array of six electro-thermal actuators for precise fluid control, reducing leakage in microscale channels via an electrostatic latching mechanism